Hemerocallis hongdoensis (Liliaceae): A New Species from Korea

Myong Gi Chung and Soon Suk Kang
Department of Biology, Gyeongsang National University, Chinju 660-701,
The Republic of Korea

ABSTRACT. *Hemerocallis hongdoensis*, a new species of section *Fulvae*, is described. *Hemerocallis hongdoensis* occurs in rocky and humus soil on talus slopes or rocky cliffs on remote islands off the southwestern coast of Korea. *Hemerocallis hongdoensis* is most closely related to *H. aurantiaca* but differs from this species by its underground parts lacking a rhizome, deciduous leaves, ovate-lanceolate bracts below inflorescences which are 1.2–3.5 cm long, dichotomous or trichotomous inflorescences which are 3–9 cm long, stout perianth tube (2.4–3.2 cm × 5.5–6.0 mm), orange-yellow perianth lacking a red tinge, and a different flowering period.

Hemerocallis L. is an economically important genus of approximately 30 species restricted mainly to eastern Asia (Matsuoka & Hotta, 1966). *Hemerocallis* has been placed in the Liliaceae (Cronquist, 1981; Hutchinson, 1964) or Hemerocallidaceae (Dahlgren et al., 1985). Matsuoka & Hotta (1966) and Hotta (1986) pointed out that the major difficulty with the classification of *Hemerocallis* lies in the uncertainty regarding criteria for delimiting the species. The taxonomic difficulties have been attributed to the relatively small number of diagnostic characters. Many species (e.g., *H. aurantiaca* Baker, *H. flava* L., *H. fulva* L., and *H. thunbergii* Baker) were described on the basis of cultivars with unknown origins (Matsuoka & Hotta, 1966), and with the additional problems of extreme difference in appearance between living plants and dried herbarium specimens (i.e., floral morphology and color of perianth), missing label data on dried herbarium specimens (i.e., flowering time and odor) (Matsuoka & Hotta, 1966), and possible widespread hybridization (Kitamura et al., 1986). For these reasons, the treatment of species within *Hemerocallis* has varied depending on the authors. For example, Matsuoka & Hotta (1966) and Hotta (1986) treated *H. littorea* Makino as a variety under *H. fulva*, while Kitamura et al. (1986) treated the taxon as a variety under *H. aurantiaca*. Matsuoka & Hotta (1966) also noted that Bailey (1930), Nakai (1932), and Stout (1941) did not consider the variability of natural populations when developing their classifications. Based on the literature for *Hemerocallis* (e.g., Bailey, 1930; Nakai, 1932; Stout, 1941; Ohwi, 1965; Matsuoka & Hotta, 1966; Hotta, 1986; Kitamura et al., 1986), the Japanese *Hemerocallis* are relatively well known with respect to their geographical and ecological distribution. On the other hand, the daylilies native to Korea are not well understood taxonomically. In 1988, 1991, 1992, and 1993, we conducted field trips to collect daylilies from natural populations in Korea in order to better understand the variation of morphological characters and geographical and ecological distribution. In 1988 and 1993, while visiting the remote islands of Hong, Sohuksan, and Taehuksan off the southwestern coast of Korea, we encountered a morphologically distinct group of *Hemerocallis* populations not referable to any described species. In the herbaria at Seoul National University (SNU) and Tokyo University (TI), which we visited, there were two undetermined specimens of this group collected by Ishidoya and T. Chung (TI). This series of populations is a new species as described below, and is named after the type locality, Hong Island.

Hemerocallis (sect. *Fulvae* Nakai em.) **hongdoensis** M. Chung & S. Kang, sp. nov. TYPE: Korea. Chollanam Do, Shinan Gun, Huksan Myeon, Hong Island, Hongdo-1-gu, among rocky and humus soil on E-facing talus slope, open area, ca. 30 m, 16 Aug. 1993, *M. G. Chung & S. S. Kang 2028* (holotype, GNUC; isotypes, GA, GNUC, MO, SNU, TI). Figure 1.

Radices perennes, tuberoso-inflatae, fuscae; folia viridiflava radicaria districa complanata vel striata, arcuato-deflexa, 60–100 cm longa, 1.7–3.0 cm lata; scapi erecti robustiusculi, 60–76 cm longi, 5–8 mm crassi, plerumque cum 1–2 ovata-lanceolatae bracteae. Inflorescentia dichotoma vel trichotoma, 5–17(–25)-floris 3–9 cm longi; pedicelli 1 cm longi 4 mm crassi; flores ascendentes; periantha aurantiaca-flava infundibularia 10.4–14.2 cm longa tenuiter succulentus; tubus crassus ca. 2.4–3.2 cm longi 5.5–6.0 mm crassis dilutus viridi-aurantiacus; lobi interiores 8–11 cm longi, 2.7–3.4 cm lati, margine integer, lobi exteriores lanceolati apice naviculato-acuti, 7.8–10.5 cm longi 1.3–1.7 cm lati. Capsula oblongus-ovalis, apice emarginati, pagina verruciformis, 2.5–4.1 cm longa 1.7–2.5 cm lata; semina nigra lucidula ca. 7 mm longa 5 mm lata.

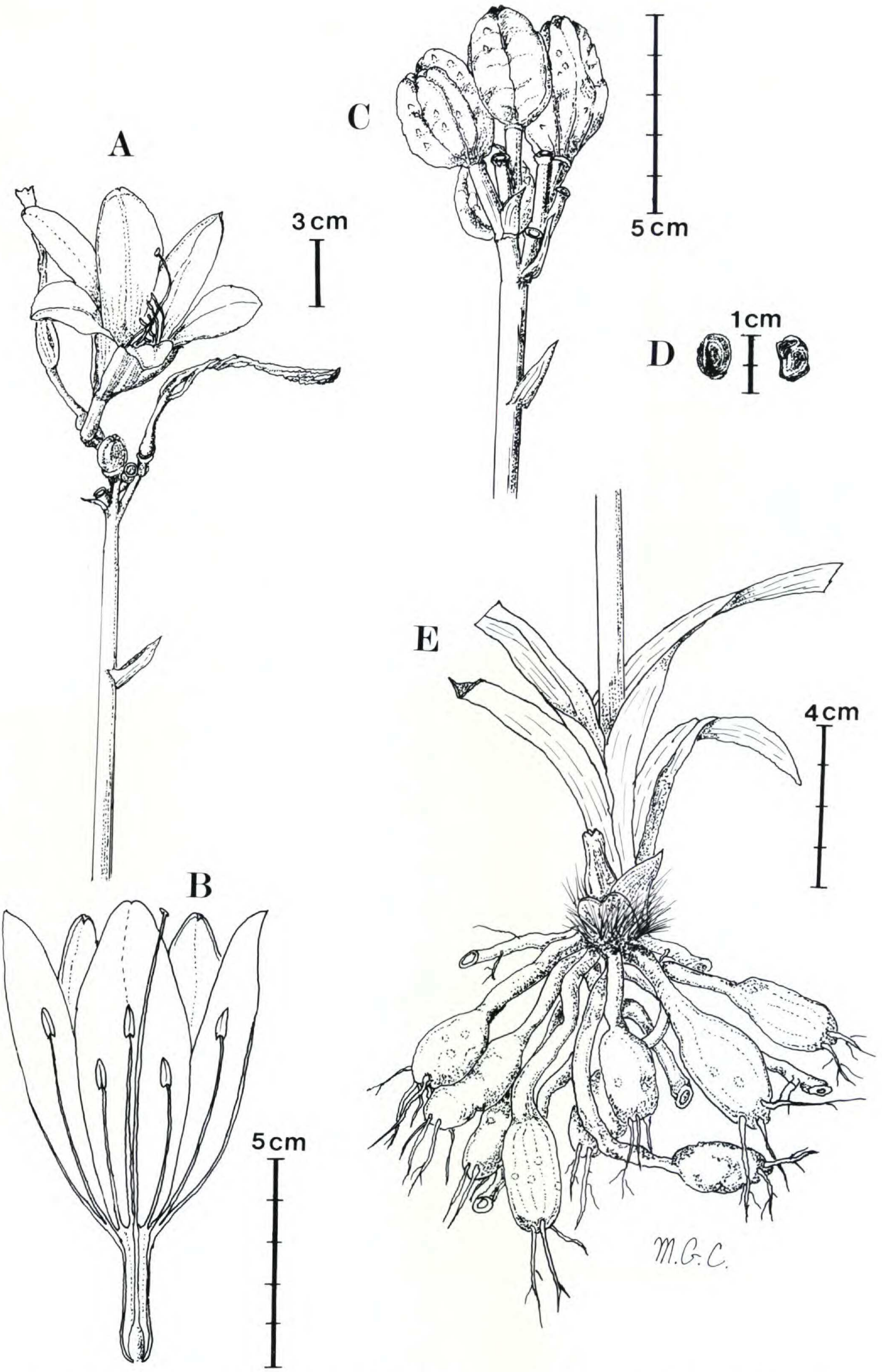

Figure 1. A–E *Hemerocallis hongdoensis* M. Chung & S. Kang. —A. Flowers on the erect scape. —B. Vertical section of flower. —C. Fruits on the erect scape. —D. Seeds. —E. Root system. Drawing by the senior author based on the holotype when fresh.

Herbaceous perennials. Roots fusiform-tuberous, 2.5–3.5 cm long, 1 cm wide, brown with gray tint. Leaves rather thick, 60–100 cm long, 1.7–3.0 cm wide, smooth, surface flat or striated glaucous, greenish yellow. Scapes erect, robust, 60–76 cm long, nearly as long as or shorter than leaves, somewhat thickened, ca. 5–8 mm wide at the base, usually with 1–2 ovate-lanceolate bracts below the inflorescence, 1.2–3.5(–8.0) cm long, 10 mm wide. Inflorescence dichotomous or trichotomous with the same emergent degree, with 5–17(–25) flowers, 3–9 cm long, pedicels 1 cm long, 4 mm wide, usually longer than the subtending bracts; bracts ovate, greenish, membranous on margin. Perianth (when fresh) orange-yellow lacking red tinge, tubular-funnelform, 10.4–14.2 cm long; tube stout, ca. 2.4–3.2 cm long, 5.5–6.0 mm wide, green with orange tint; throat orange-yellow, inner perianth lobes 8–11 cm long, 2.7–3.4 cm wide, outer perianth lobes 7.8–10.5 cm long, 1.3–1.7 cm wide. Stamens 4–5 cm long, inserted; filament orange-yellow, attached to the base of the perianth tube; anthers ca. 7 mm long, dark brown with purple tint. Style filiform, ca. 9.7 cm long, exserted beyond the stamens; stigma small, capitate, moist. Capsule somewhat large, 2.5–4.1 cm long, 1.7–2.5 cm wide, usually oblong-oval, rarely roundish, cross-wrinkled when dried, surface usually covered with wartlike projections, apex emarginate; seeds shining black, ovoid, angled below, 7 mm long, 5 mm wide. Flowering from late July to August in Korea; fruiting and maturing seed in September.

Because a number of morphological characters found in *Hemerocallis hongdoensis* are shared with synthetic characters of section *Fulvae* (Matsuoka & Hotta, 1966) (e.g., diurnal flowering, orange-yellow perianth, scape with 1–3 scattered bracts, 1–3 dichotomously branched inflorescences, and partly inflated roots), the new species is placed in this section.

Hemerocallis hongdoensis is distinct from other species of *Hemerocallis* by the highly swollen roots lacking a rhizome; deciduous leaves; thick erect scape with ovate-lanceolate bracts (1.2–3.5(–8.0) cm long) below the inflorescence; short (3–9 cm), robust, dichotomous or trichotomous inflorescences; stout perianth tube (ca. 2.4–3.2 cm long, 5.5–6.0 mm wide); perianth lobes obovate with round tip and entire margins; and large-sized fruits (2.5–4.1 cm long, 1.7–2.5 cm wide) usually with wartlike projections.

Hemerocallis hongdoensis grows on rocky cliff-grassland with *Hosta yingeri* S. B. Jones and other herbaceous perennials, at 3–80 m above sea level. The new species has been presumably misidentified and assigned to the *H. littorea* Makino complex by Korean botanists because of its stout scapes, dichotomously branched inflorescences, relatively large flowers, and coastal habitats (Lee, 1985; M. Kim, pers. comm.). *Hemerocallis littorea*, which mostly grows in the coastal areas of western Honshu and southern Kyushu of Japan, is distinct from *H. hongdoensis* by having a well-developed rhizome, evergreen leaves, orange-yellow perianth with a red tinge, and a different flowering period, i.e., September to October versus late July to August for *H. hongdoensis* (in Korea) (Matsuoka & Hotta, 1966; Hotta, 1986).

Hemerocallis hongdoensis appears to be more closely related to *H. aurantiaca* because of its short inflorescence and the size of its perianth lobes. It differs from this species by the underground parts lacking a rhizome, deciduous leaves, orange-yellow perianth color lacking a red tinge, dichotomous or trichotomous inflorescences, 1–2 ovate-lanceolate bracts below the inflorescence which are 1.2–3.5 cm long, and a different flowering period. *Hemerocallis aurantiaca* flowers in May to July and is endemic to the western islands of Kyushu, Japan (Ohwi, 1965).

Hemerocallis hakuunensis Nakai is different from *H. hongdoensis* in having relatively small-sized fusiform-tuberous roots each 1.5–2.0 cm long, usually (1–)2–3(–4)-branched inflorescences which are 5–22 cm long, perianths 6.3–12.3 cm long, inner perianth lobes 1.5–2.7 cm wide, and fruits 2.0–2.3 cm long, 1.1–1.5 cm wide (Chung et al., in press). *Hemerocallis hakuunensis* flowers from mid June to July (August in the mountainous areas) and is endemic to southern, central, and northwestern Korea including Kojae, Namhae, Komun, Bogil, Chin, Anmyeon, and Kangwha Islands (Chung et al., in press).

Korean name. Hongdo-wonch'uri.

Paratypes. KOREA. Chollanam Do, Shinan Gun, Huksan Myeon, Taehuksan Island, on Munam hillside near ocean, 24 Aug. 1919, *Ishidoya & T. Chung 3375, 3390* (TI); Yeri-1-gu, in open area of grassland on rocky cliff near ocean, 15 Aug. 1993, *M. G. Chung & S. S. Kang 2024* (GA, GNUC, MO, TI).

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